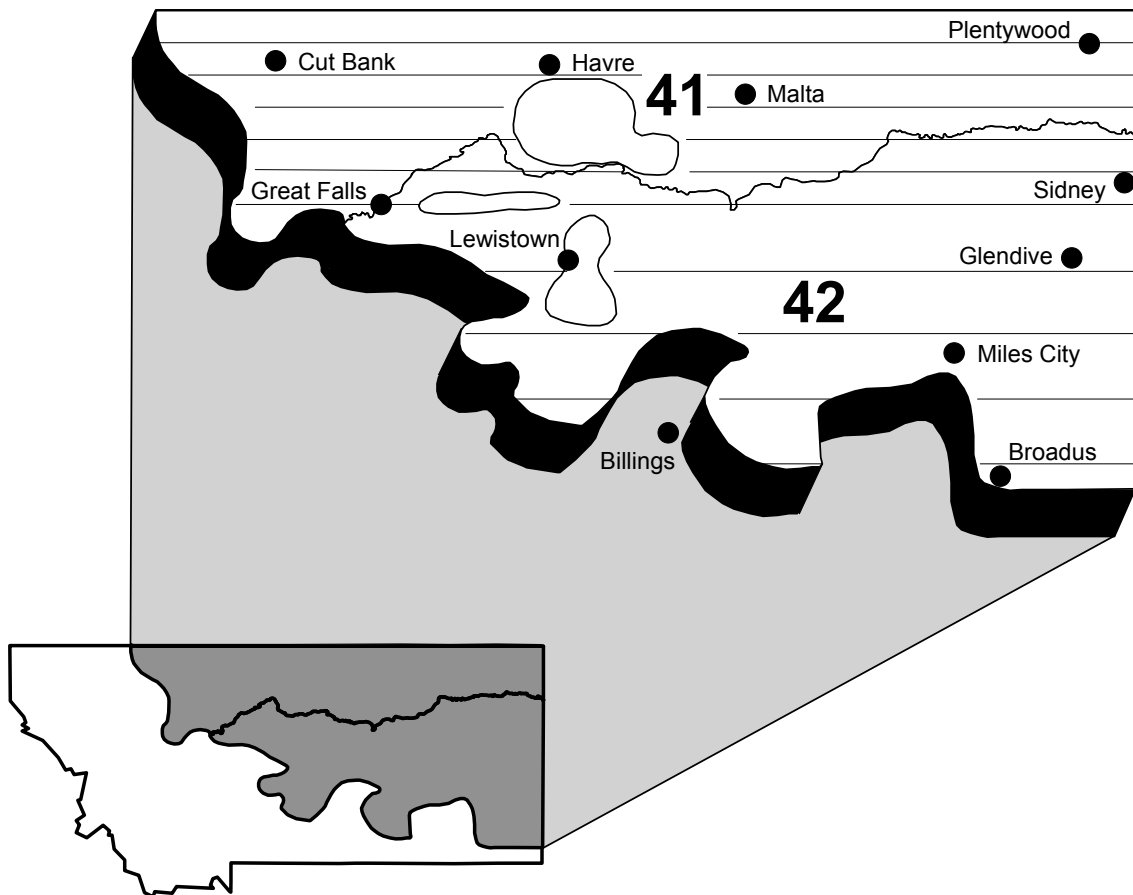


Waterfowl Breeding Population Survey
for

MONTANA



2002

Title: Waterfowl Breeding Population Survey for Montana

Strata Surveyed: 41 and 42

Dates: May 9 - 18, 2002

Data Supplied By: U.S. Fish and Wildlife Service (USFWS)
Division of Migratory Bird Management (DMBM)

Aerial Crew:

Pilot/Observer: James F. Voelzer, Chief
Waterfowl Population Surveys DMBM
Portland, OR

Observer: Ray Bentley, Flyway Biologist DMBM
Corvallis, OR

Ground Crew:

Leader: Allison Arnold, Wildlife Biologist, EPIC, L.L.C.
Dripping Springs, Texas

Assistant: Sara McFall, Biological Technician
Ridgefield NWR, Ridgefield, WA

Abstract:

The 2002 waterfowl Breeding Population Survey for Montana was completed on May 18 with all segments and transects covered as outlined in the survey design. Drought conditions prevailed across the region ranging from moderate to severe with localized portions of good habitat. A late spring combined with May storm systems provided some moisture but failed to adequately supply semipermanent wetlands by mid May. Total pond counts were 44.6% below the 10-year mean and 36.8% below the long term mean.

Waterfowl population estimates reflected the dry conditions with a 24.7% decrease in dabbling species from 2001, a 51% (rounded) decrease from the 10-year mean, and a 37.6% decrease from the long term mean. Declines were consistent for all species except American green-wing teal.

Diver species showed declines in population estimates of 2%(rounded) and 19.2% from 10-year

and long term means with a 28.5% decrease from 2001. Redheads were the only diver species to indicate a significant increase in numbers not considered to be a function of survey techniques. Canada goose population estimates were down only slightly (8.6% from the 10-year mean) but once again above the long term mean by 52.7%. Drought induced crowding was observed and combined with overall poor habitat conditions the initial outlook for eastern Montana is for below average production.

Methods:

Procedures followed in conducting the survey are described in the Standard Operating Procedures for Aerial Breeding Ground Surveys in North America, Section III, revised 1987. The survey design for Montana included 11 air/ground comparison segments comprising 5.7% of the total 193 segments flown. All segments specified by the survey design were counted.

Air and ground crew members met in Pierre South Dakota on April 30. After an initial three day delay due to moderate snow fall survey flights in Montana were initiated on May 9 and continued through May 18. Flights were canceled on May 10, 15, and 16 due to adverse weather conditions. Data for the western Dakotas was sent to John Solberg for inclusion in the overall South Dakota and North Dakota report.

A Cessna TR182 aircraft (N705) was used to fly the survey over approximately 51 hrs of flight time. Survey personnel included Jim Voelzer as pilot/observer, Ray Bentley as pilot/observer, Allison Arnold as ground crew leader, and Sara McFall as ground crew assistant. This was Jim s 25th season flying this particular survey area and Ray s 4th season as observer (2nd season in crew area 5). 2001 was Allison s 5th year as ground crew leader and Sara s first season as assistant.

Aerial observations were collected using onboard PC computers interfaced with the aircraft GPS receiver. Each observation was marked with time and location and processed using software developed by Jack Hodges, USFWS/DMBM, Juneau, Alaska. Field processed data files were then sent to Mark Otto, Population and Habitat Assessment Section (PHAS) USFWS/DMBM and Kristi Wilkins (PHAS) in Laurel, MD for application of visibility correction factors and table compilation.

Weather and Habitat Conditions:

Eastern Montana experienced a mild winter with much below normal precipitation. Palmer drought index (PDI), and NOAA s standardized precipitation index(SPI) both classify the area as under moderate to severe drought conditions. Spring temperatures were below normal with late green up and little residual vegetative cover from 2001. A May 4-6 storm system produced 6-12" of snowfall however the resulting addition of moisture provided only enough to initiate partial germination of annual vegetation and contributed little to permanent pond water levels or condition of seasonal wetlands. Overall habitat conditions for eastern Montana were fair to poor. Observations of pond numbers and habitat conditions by the aerial crew resulted in a mosaic of classified habitats with poor and fair dominating the area. The immediate drainage of Fort Peck Reservoir and the Missouri River eastward displayed slightly improved conditions as did the extreme southeast portion of the survey area. Even by the end of the survey spring conditions

were dry and cool with most seasonal basins dry, vegetative cover slight or non existent, and water levels low in those basins that did hold water. Estimated total pond numbers of 164,700 (Table 2) represents a 44.6% decrease from the 10 year mean and a 36.8% departure from the long term mean. The 7% increase in estimates of total pond numbers over 2001 was the result of increase pond observations in stratum 42 and is discussed below. Communications with local businesses and our observations indicated very poor initial growth of cereal grains with possible crop failures predicted reflecting the general condition in eastern Montana.

Stratum 41 (North of the Missouri River)

This stratum showed pond counts ($N = 71,277$) to be lower than the previous year's estimate by 4% with similar trends in areas of poor and fair habitat conditions. This area's estimation of pond numbers represents a 51% decline from the 10-year mean and nearly a 45% decline from the long term mean. Water levels in most basins are below conditions conducive to optimal waterfowl nesting and observations of pair crowding on remaining stock ponds and creeks with little shoreline vegetation supported the general assessment of poor conditions. A narrow band of area extending west along the Fort Peck reservoir and immediate associated drainages was classified as good habitat showing more seasonal wetlands and residual upland cover and higher water levels in permanent wetlands. This area actually is a westward extension of much better habitat present in western North Dakota and proceeds to deteriorate to fair and poor conditions moving further west. A relatively narrow band of slightly improved conditions is present immediately adjacent to the Rocky Mt. front range. This is an area of higher elevations and likely benefits from greater snowfall and subsequent runoff from the adjoining mountains. Overall, current observations in stratum 41 indicate below average nesting conditions which, in turn, portend poor production.

Stratum 42 (South of the Missouri River)

This region displayed generally fair to poor conditions with some noted exceptions. The eastern portion of the stratum bordering the Dakotas showed good habitat conditions actually improved slightly over last year's observations. As in strata 41 this is essentially a westward extension of more favorable habitat present in the Dakotas and begins to become much less favorable as you move west. The far northeastern portion of the region in the area of Fort Peck and the Missouri River drainages also showed generally good habitat conditions as noted previously. These areas of more favorable habitat conditions contained good CRP upland cover, adequate residual shoreline and emergent vegetation, and good permanent and seasonal wetland conditions. As in strata 41, a narrow band of higher elevation habitat immediately adjacent to the western mountains was also considered to be good habitat, a result of run off and greater winter precipitation. The area north of Billings and west of Miles City and Glendive suffered from a general lack of winter precipitation and heavy grazing of uplands. The result is nonexistent seasonal wetlands, many dry semipermanent ponds, very low water levels in stream drainages and normally permanent ponds, and marginal overwintered upland cover. The reported estimate of pond numbers is actually

greater than for 2001 by 17% however this is a suspected anomaly of data handling and actually supports the observation of less than normal precipitation and will be discussed later. Pond estimates for this region are 38% below the 10-year mean and nearly 29% below the long term mean. While the extreme eastern portion of the region may provide adequate nesting condition with subsequent improved waterfowl production, the general outlook for stratum 42 is for only average to below average nest success.

Breeding Population Estimates

Aerial and ground observations initially indicated that survey timing for key species was appropriate. Mallard, pintail, northern shoveler, and to a lesser extent gadwall all appeared to be paired and more or less established on territories. Blue winged teal initially seemed to be absent or in transient flocks. A spring storm system immediately prior to the survey seemed to temporarily halt breeding activity in the region however by May 15 the air crew was observing increasing numbers of flocked drakes as expected. Throughout the survey period and in most of the surveyed regions crowding was observed on permanent ponds and water impoundments. Observations of multiple pairs of several species all present on one pond of marginal habitat were common.

Population estimates for dabblers totaled 538,700 in 2002. This represents 24.7% decrease from 2001, a 51% decrease from the 10 year mean, and a 37.6% decrease from the long-term mean (Table 1). This trend was consistent for all species observed with the exception of American green-winged teal which showed increases in observed numbers over the long-term and 10 year means and a 125% increase over 2001. Population estimates for mallards were 22.3% lower than 2001 and nearly 50% below the 10-year mean. The largest one year decline was observed in Gadwall (51.2%) following several years of increased numbers (Appendix 1). The largest departure from 10 year mean estimates occurred in American wigeon (67.8%) which also showed the second largest reduction from the long term mean (66%). Northern pintail mirrored other dabbler species with declines of 40.6% from 2001, 64.7% from the 10-year mean, and 70.5% from the long term mean, the largest reduction in dabbler species for this endpoint.

Total diving duck population estimates (N= 49,500) decreased 28.5% from 2001 with a slight (2%) decrease from the 10 year mean and a 19.2% decline from the long term mean. Decreases in population estimates from 2001, the 10 year mean and the long term mean were consistent among species with exceptions in redhead, ruddy ducks, and goldeneyes. The nearly 200% increase in goldeneye population estimates is simply due to the historic and continuing extreme low numbers present in the region. This is also the case with mergansers, bufflehead, and other infrequently encountered species. Ruddy duck population estimates of 14,900 with its commensurate 80+% increases over the 10-year and long term means also may be artifacts of the data expansion process as this species can occur in scattered but atypically large flocks, inflating the actual breeding population estimate for the area. Redheads showed a continuing trend of substantial increases over all three measured endpoints. The largest negative departure from the one year, 10-year, and long term mean estimates occurred in canvasback at 72.6%, 81.9%, and 77.5% respectively. Scaup, a species of particular interests, continued to show declines between 22% and 45%.

Canada goose population estimates declined slightly (6%) from 2001 and 8.6% from the 10-year mean showing a 52.7% increase over the long term mean.

American coot population estimates somewhat recovered from 2001 by showing a 68.3% increase. However, this species still reflects the dry conditions present in the region by being 35.2% below the 10 year mean and 43.6% below the long term mean.

Both diver and dabbling species observations were distributed equally between both strata 41 and 42 with population estimates reflecting this trend. Population estimates for coots were somewhat higher in stratum 41 likely a function of slightly more permanent water and associated wetland areas.

Trend graphs #1 through #26 provide a visual depiction of trends in population estimates over long term.

Conclusions:

Observations in 2002 indicated a mosaic of habitat classifications ranging from poor to good. A mild winter combined with a late spring of cool temperatures and initially low precipitation produced a continuance of very dry conditions in eastern Montana. A late spring storm system provided surface water and subsequent localized green-up. However, it did not contribute significantly to the type of seasonal and permanent wetland complexes that yield successful waterfowl nesting and subsequent production. Post survey ground observations indicated nesting chronology was not significantly altered from spring snows and supported our conclusions of generally fair to poor conditions especially in the central and western portions of the region. Actual estimated pond numbers for strata 42 are greater than for 2001 however this may be misleading. The afore mentioned areas of good habitat were equal to or only slightly improved over observations in 2001 and represent less than 10% of the strata. An increase in estimated pond numbers in habitat generally classified as poor can occur when a region's pond counts include extensive areas of small stream channels. During seasons of normal precipitation, stream beds are flowing or at least recorded as one continuous water body. Conversely in years with less than normal precipitation these stream channels become partially dry forming a fragmented series of pools which subsequently are recorded as multiple ponds resulting in an inflated pond number in comparison to actual habitat conditions. Waterfowl population estimates support the conclusion of poor nesting conditions with general decreases in both dabbling and diver numbers over long term and 10-year mean values and most showing further decreases even from 2001 estimates which was also considered to be a less than optimal production year. The increased numbers of green-winged teal could very well be a short stopping of migrants due to the late spring not reflected in other species. While localized areas of both stratum 41 and 42 may provide adequate water/vegetation conditions, the remainder and majority of the region is predicted to be only fair to poor with regards to waterfowl nesting potential and subsequent production.

Table 1. Status of waterfowl breeding population estimates (thousands, adjusted for visibility bias) by species and stratum with comparison against the previous year, the previous 10-year mean, and the long-term mean for Montana.

Species/Ponds	Stratum		% Change From						
	41	42	2002 Total	2001 Total	10-Year Mean	Long- Term Mean	2001	10-Year Mean	Long- Term Mean
Ducks									
Dabblers									
Mallard	83.8	102.0	185.8	239.1	370.3	292.2	-22.3%	-49.8%	-36.4%
Am. black duck	0.0	0.0	0.0	0.0	0.0	0.0	--	--	--
Gadwall	48.2	39.2	87.3	179.0	233.6	117.1	-51.2%	-62.6%	-25.4%
Am. wigeon	15.0	13.6	28.6	41.6	88.6	83.9	-31.3%	-67.8%	-65.9%
Am. green-winged teal	22.0	18.6	40.6	18.1	27.8	21.3	124.9%	45.9%	90.2%
Blue-winged teal	33.4	40.0	73.3	72.8	124.7	98.3	0.8%	-41.2%	-25.4%
N. shoveler	49.0	27.2	76.2	86.1	118.6	91.6	-11.5%	-35.8%	-16.8%
N. pintail	34.6	12.3	47.0	79.0	133.0	159.3	-40.6%	-64.7%	-70.5%
Subtotal	285.9	252.8	538.7	715.7	1096.8	863.6	-24.7%	-50.9%	-37.6%
Divers									
Redhead	6.5	3.0	9.5	4.8	4.9	5.8	98.7%	93.4%	62.2%
Canvasback	0.8	0.5	1.2	4.5	6.9	5.5	-72.6%	-81.9%	-77.5%
Scaups	10.4	10.2	20.6	31.5	26.5	37.2	-34.5%	-22.3%	-44.6%
Ring-necked duck	1.1	0.0	1.1	2.9	2.8	2.4	-61.1%	-58.7%	-51.9%
Goldeneyes	0.0	1.6	1.6	0.0	0.5	0.8	--	199.7%	110.5%
Bufflehead	0.0	0.5	0.5	0.6	1.0	1.4	-14.4%	-44.3%	-62.1%
Ruddy Duck	3.7	11.2	14.9	24.9	8.0	8.1	-40.3%	85.4%	83.0%
Subtotal	22.5	27.1	49.5	69.3	50.6	61.3	-28.5%	-2.1%	-19.2%
Miscellaneous									
Long-tailed duck	0.0	0.0	0.0	0.0	0.1	0.0	--	-100.0%	-100.0%
Eiders	0.0	0.0	0.0	0.0	0.0	0.0	--	--	--
Scoters	0.0	0.0	0.0	0.0	0.1	0.0	--	-100.0%	-100.0%
Mergansers	3.3	5.3	8.6	4.8	3.6	2.4	80.3%	137.1%	266.2%
Subtotal	3.3	5.3	8.6	4.8	3.8	2.4	80.3%	128.5%	259.0%
Total Ducks	311.7	285.2	596.8	789.8	1151.1	927.3	-24.4%	-48.2%	-35.6%
Canada Goose	30.6	52.2	82.8	88.2	90.6	54.2	-6.1%	-8.6%	52.7%
Am. coot	28.5	7.8	36.3	21.6	56.1	64.4	68.3%	-35.2%	-43.6%
Ponds	71.3	93.4	164.7	154.0	297.6	260.4	7.0%	-44.6%	-36.8%

Table 2. Long-term trend in adjusted May pond estimates (thousands) by stratum with comparisons against the previous year, the previous 10-year mean, and the long-term mean for Montana.

Year	Stratum		Total
	41	42	
1974	142.4	66.9	209.2
1975	150.6	128.8	279.4
1976	109.3	126.3	235.5
1977	70.4	88.2	158.6
1978	145.7	156.2	301.9
1979	135.0	106.2	241.2
1980	77.9	74.4	152.3
1981	103.3	73.0	176.3
1982	147.1	126.5	273.5
1983	85.2	88.7	173.9
1984	88.6	117.5	206.2
1985	127.3	160.0	287.3
1986	190.4	206.3	396.7
1987	102.2	127.1	229.3
1988	78.3	92.0	170.3
1989	160.5	177.3	337.8
1990	121.7	124.3	246.0
1991	111.6	130.1	241.6
1992	95.6	140.0	235.5
1993	94.3	100.5	194.8
1994	227.4	251.1	478.5
1995	164.1	184.7	348.8
1996	209.4	174.7	384.1
1997	154.3	160.2	314.5
1998	149.4	176.0	325.4
1999	227.6	149.8	377.3
2000	74.6	88.0	162.6
2001	74.2	79.7	154.0
2002	71.3	93.4	164.7
10-year Mean	147.1	150.5	297.6
Long-term Mean	129.2	131.2	260.4
Percent Change:			
From 2001	-4.0%	17.2%	7.0%
From 10-year Mean	-51.5%	-37.9%	-44.6%
From Long-term Mean	-44.8%	-28.8%	-36.8%

Appendix 1. Long-term trend in adjusted waterfowl breeding population estimates (thousands).

Species/Ponds	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974
Ducks										
Dabblers										
Mallard	363.3	489.4	320.9	198.5	291.3	311.5	273.9	374.2	261.3	198.2
Am. black duck	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gadwall	147.9	130.5	100.0	93.7	94.3	53.3	49.1	15.5	11.8	69.6
Am. wigeon	36.8	43.2	63.6	68.6	85.8	92.6	58.3	129.8	99.2	76.8
Am. green-winged teal	22.5	18.4	29.9	20.5	8.6	28.2	11.5	31.7	51.5	21.9
Blue-winged teal	137.5	133.3	82.9	53.2	149.9	99.3	87.1	17.0	8.5	77.7
N. shoveler	65.7	83.1	98.6	78.0	109.6	64.9	65.5	61.1	47.2	58.1
N. pintail	287.4	262.9	277.3	72.2	156.4	191.2	124.3	240.6	167.7	116.8
Subtotal	1061.2	1160.7	973.1	584.9	895.9	840.9	669.7	870.0	647.3	619.2
Divers										
Redhead	2.6	4.2	12.4	1.4	2.6	2.0	2.4	0.0	2.4	1.0
Canvasback	3.1	0.5	1.6	3.5	5.5	3.6	5.6	6.7	9.6	1.3
Scaups	27.8	44.7	43.0	27.0	50.0	33.2	15.6	39.5	49.2	35.8
Ring-necked duck	3.3	0.9	7.4	2.9	0.2	0.0	0.0	0.0	0.0	2.1
Goldeneyes	0.0	1.3	0.0	0.0	0.6	0.0	0.0	8.8	2.4	0.0
Bufflehead	1.3	1.3	0.4	2.1	1.4	0.4	0.0	1.7	0.6	1.7
Ruddy Duck	0.0	2.7	1.7	1.5	22.3	0.6	1.3	5.7	3.1	1.8
Subtotal	38.1	55.7	66.4	38.3	82.7	39.9	25.0	62.4	67.4	43.8
Miscellaneous										
Long-tailed duck	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Eiders	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Scoters	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mergansers	1.4	0.0	7.7	0.7	0.0	0.0	0.0	0.7	0.8	3.5
Subtotal	1.4	0.0	7.8	0.7	0.0	0.0	0.0	0.7	0.8	3.5
Total Ducks	1100.7	1216.4	1047.3	623.9	978.6	880.8	694.6	933.1	715.5	666.6
Canada Goose	19.0	0.0	44.9	42.2	42.2	50.4	61.2	31.6	14.0	22.1
Am. coot	13.9	19.4	23.4	58.1	31.0	22.3	9.6	17.5	38.0	22.2
Ponds										209.2

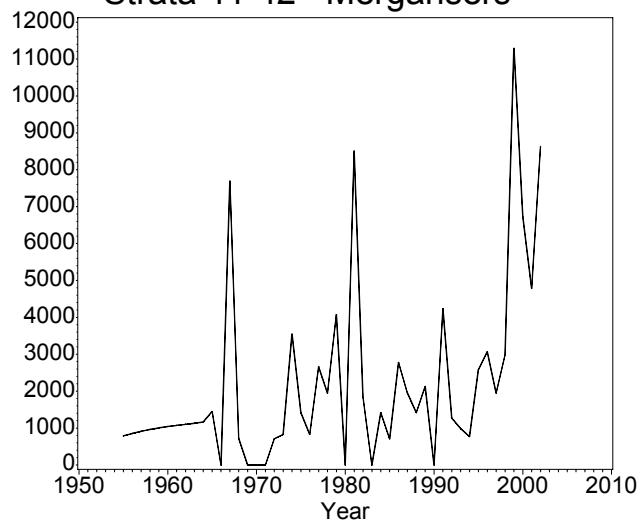
Species/Ponds	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
Ducks										
Dabblers										
Mallard	478.4	168.0	171.0	282.5	258.3	256.2	245.8	323.5	230.1	189.8
Am. black duck	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gadwall	72.9	55.3	19.7	174.8	78.6	83.5	119.9	95.1	71.0	38.3
Am. wigeon	110.6	99.7	77.1	157.0	87.9	148.9	65.2	89.4	77.9	73.0
Am. green-winged teal	53.1	13.6	3.9	18.2	40.1	9.9	9.1	13.4	18.9	10.6
Blue-winged teal	98.3	207.1	93.8	93.9	117.5	103.4	81.8	211.0	79.9	52.1
N. shoveler	100.2	102.2	31.1	179.2	189.6	52.2	121.8	160.7	61.8	65.0
N. pintail	259.2	226.0	118.5	348.9	324.8	146.6	157.3	306.9	88.3	99.8
Subtotal	1172.8	871.9	514.9	1254.7	1096.7	800.7	801.0	1200.0	627.9	528.6
Divers										
Redhead	0.7	2.7	3.2	7.0	14.7	4.4	25.0	15.0	10.5	19.2
Canvasback	2.1	16.2	3.2	6.4	10.4	4.8	5.4	12.5	5.0	3.5
Scaups	26.4	29.9	34.4	72.1	88.6	36.8	35.8	61.0	47.1	53.3
Ring-necked duck	0.0	1.4	0.2	0.8	0.0	0.9	0.9	2.4	16.3	3.0
Goldeneyes	0.0	0.0	0.6	0.0	1.1	1.6	0.0	0.0	0.0	0.6
Bufflehead	0.4	0.6	0.0	1.3	3.6	1.0	2.4	5.6	0.4	1.8
Ruddy Duck	2.6	1.9	1.2	14.1	12.4	0.7	17.1	17.8	9.1	11.8
Subtotal	32.2	52.7	42.8	101.7	130.8	50.1	86.6	114.2	88.3	93.1
Miscellaneous										
Long-tailed duck	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Eiders	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Scoters	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0
Mergansers	1.4	0.8	2.7	1.9	4.1	0.0	8.5	1.8	0.0	1.4
Subtotal	1.4	0.8	2.7	1.9	4.1	0.0	8.5	1.8	0.2	1.4
Total Ducks	1206.4	925.4	560.3	1358.3	1231.5	850.8	896.0	1316.0	716.5	623.1
Canada Goose	23.1	27.0	26.3	27.9	41.6	36.6	31.3	37.1	34.6	51.1
Am. coot	13.8	59.5	16.4	83.1	319.4	104.2	197.7	53.3	42.9	103.5
Ponds	279.4	235.5	158.6	301.9	241.2	152.3	176.3	273.5	173.9	206.2

Appendix 1 (continued). Long-term trend in adjusted waterfowl breeding population estimates (thousands).

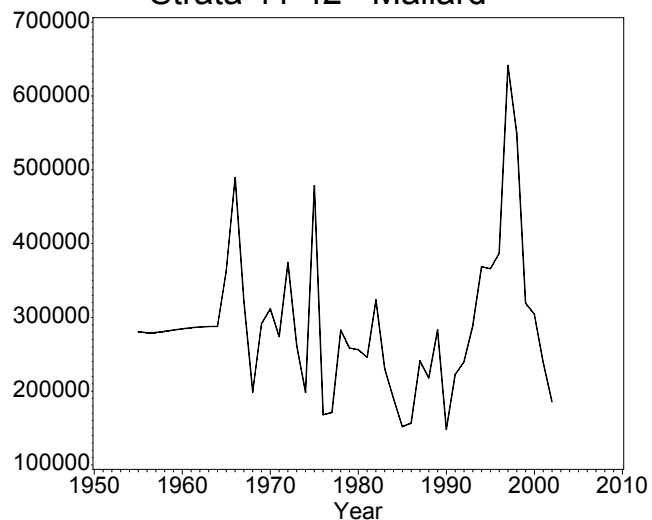
Species/Ponds	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Ducks										
Dabblers										
Mallard	152.0	156.9	240.9	218.0	282.8	148.4	222.7	239.9	288.6	368.7
Am. black duck	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gadwall	40.8	33.8	32.6	30.7	128.5	56.7	96.9	154.4	181.5	182.9
Am. wigeon	58.7	52.0	64.9	44.0	58.8	126.2	70.3	88.2	65.5	137.7
Am. green-winged teal	6.4	6.2	6.0	12.0	17.0	15.7	12.4	16.3	8.4	34.0
Blue-winged teal	38.6	21.6	40.2	83.5	65.9	76.3	77.7	89.0	60.3	186.4
N. shoveler	34.1	69.3	73.2	33.7	58.6	86.3	51.5	27.1	92.7	194.3
N. pintail	56.5	95.9	146.0	61.6	58.0	131.2	43.1	75.5	130.4	244.5
Subtotal	387.0	435.6	603.8	483.6	669.6	640.6	574.7	690.4	827.4	1348.5
Divers										
Redhead	2.7	3.6	3.4	2.7	7.0	7.8	6.4	5.5	5.3	3.4
Canvasback	2.1	2.8	1.0	2.1	5.1	10.8	1.0	5.6	9.3	12.5
Scaups	20.0	33.4	44.7	55.9	46.9	33.1	25.2	14.0	28.3	28.6
Ring-necked duck	4.3	7.1	0.4	1.2	3.8	0.4	0.5	3.9	4.0	5.0
Goldeneyes	1.3	2.5	0.0	0.0	1.1	0.6	0.7	0.0	1.5	0.0
Bufflehead	1.0	0.4	0.0	4.1	1.7	6.0	2.2	1.3	0.4	0.3
Ruddy Duck	8.0	4.6	0.6	25.1	5.8	9.2	38.0	9.2	1.8	4.7
Subtotal	39.3	54.5	50.2	91.2	71.4	67.9	73.9	39.6	50.6	54.5
Miscellaneous										
Long-tailed duck	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Eiders	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Scoters	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mergansers	0.7	2.8	1.9	1.4	2.1	0.0	4.2	1.3	1.0	0.8
Subtotal	0.7	2.8	1.9	1.4	2.1	0.0	4.2	1.3	1.0	0.8
Total Ducks	427.1	492.9	656.0	576.2	743.1	708.6	652.8	731.3	879.0	1403.7
Canada Goose	49.4	32.9	39.4	67.1	79.3	97.7	70.8	90.5	103.3	76.3
Am. coot	145.2	32.1	27.2	95.5	65.9	153.4	52.9	15.3	58.3	56.8
Ponds	287.3	396.7	229.3	170.3	337.8	246.0	241.6	235.5	194.8	478.5

Species/Ponds	1995	1996	1997	1998	1999	2000	2001	2002
Ducks								
Dabblers								
Mallard	366.0	386.9	641.2	549.5	319.0	304.1	239.1	185.8
Am. black duck	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
Gadwall	359.3	201.7	513.5	232.7	205.3	125.9	179.0	87.3
Am. wigeon	116.9	100.2	122.4	92.9	63.1	57.6	41.6	28.6
Am. green-winged teal	30.3	56.1	58.1	13.3	27.2	16.5	18.1	40.6
Blue-winged teal	94.4	89.3	138.1	225.5	241.5	50.0	72.8	73.3
N. shoveler	81.4	109.3	209.1	90.5	235.6	60.3	86.1	76.2
N. pintail	154.5	135.6	209.3	110.9	131.8	58.7	79.0	47
Subtotal	1202.8	1079.1	1891.7	1315.4	1223.5	673.1	715.7	538.7
Divers								
Redhead	3.4	8.1	4.3	6.1	6.3	1.8	4.8	9.5
Canvasback	8.0	4.6	9.6	6.1	4.9	3.5	4.5	1.2
Scaups	21.4	35.9	32.7	14.1	28.0	30.7	31.5	20.6
Ring-necked duck	7.0	0.4	0.0	2.1	2.4	0.0	2.9	1.1
Goldeneyes	0.4	0.0	0.9	0.7	1.4	0.5	0.0	1.6
Bufflehead	0.5	0.0	2.2	1.5	1.1	1.7	0.6	0.5
Ruddy Duck	7.0	1.2	8.9	11.8	8.3	2.4	24.9	14.9
Subtotal	47.7	50.1	58.6	42.4	52.5	40.6	69.3	49.5
Miscellaneous								
Long-tailed duck	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0
Eiders	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
Scoters	0.0	0.3	0.5	0.0	0.0	0.0	0.0	0
Mergansers	2.6	3.1	1.9	3.0	11.3	6.7	4.8	8.6
Subtotal	2.6	3.4	2.4	3.0	11.8	6.7	4.8	8.6
Total Ducks	1253.1	1132.6	1952.7	1360.8	1287.9	720.4	789.8	596.8
Canada Goose	98.6	106.6	78.5	84.9	84.2	94.9	88.2	82.8
Am. coot	33.2	38.8	80.1	12.8	174.7	69.1	21.6	36.3
Ponds	348.8	384.1	314.5	325.4	377.3	162.6	154.0	164.7

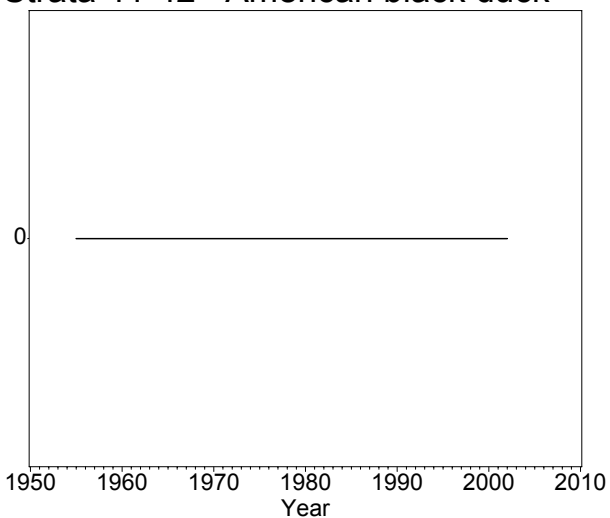
Strata 41-42 Mergansers



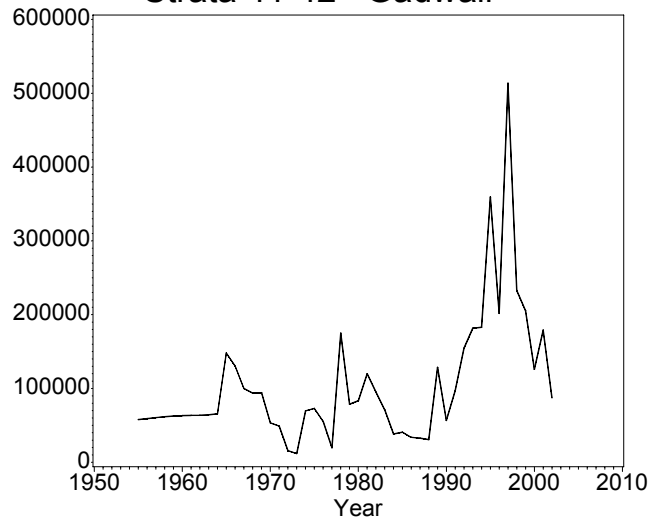
Strata 41-42 Mallard



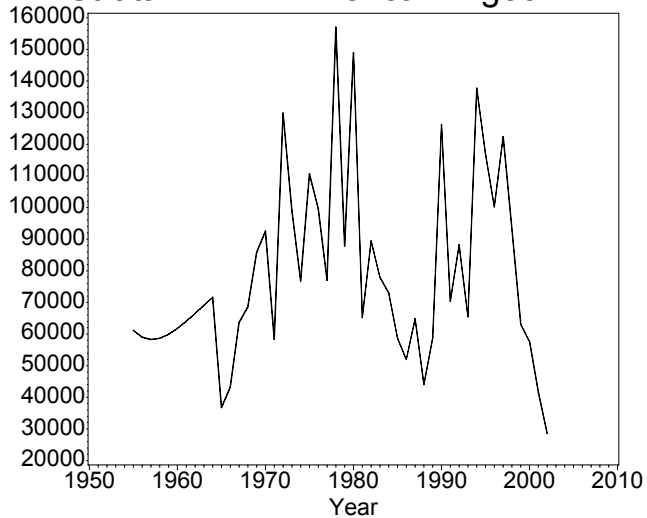
Strata 41-42 American black duck



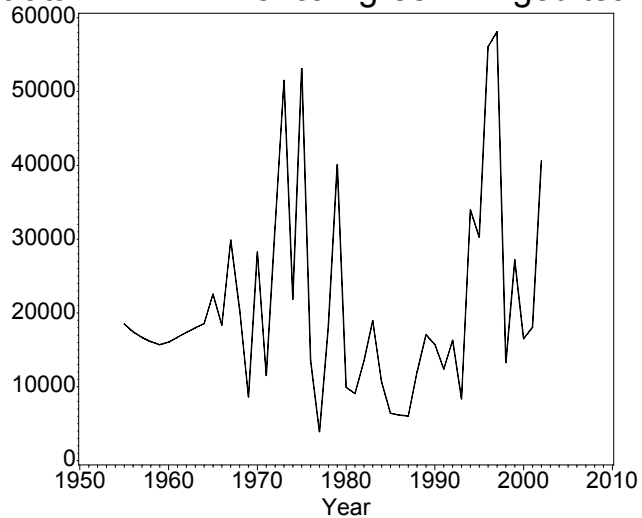
Strata 41-42 Gadwall



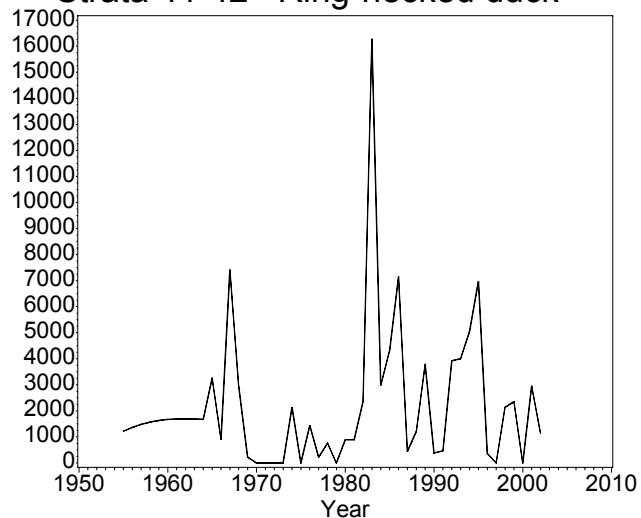
Strata 41-42 American wigeon



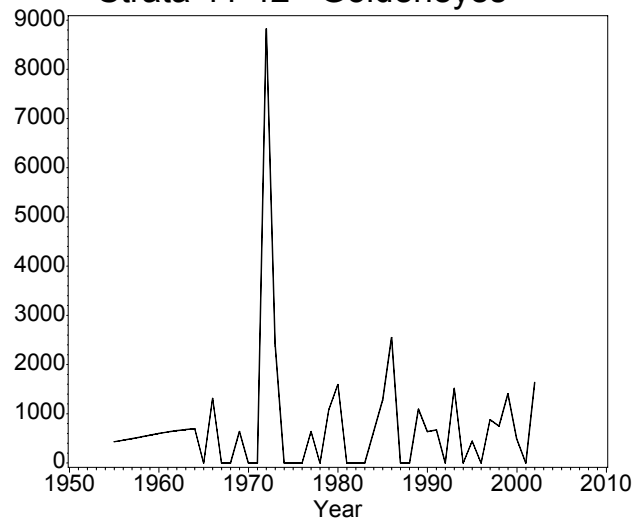
Strata 41-42 American green-winged teal



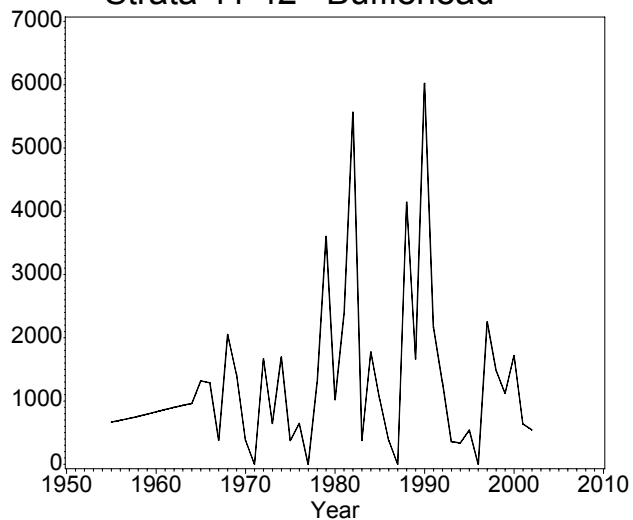
Strata 41-42 Ring-necked duck



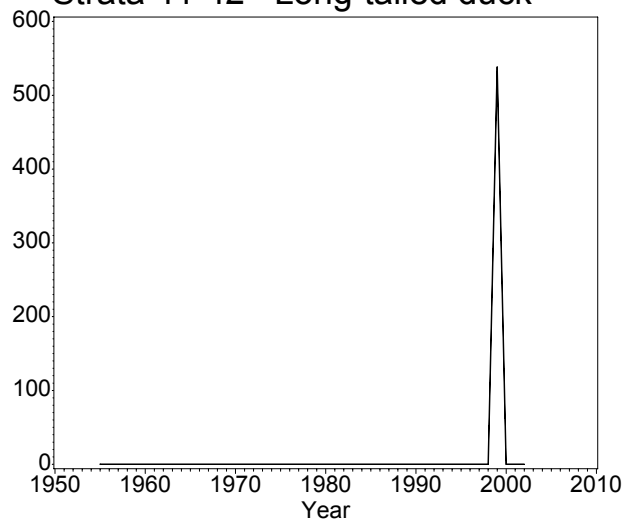
Strata 41-42 Goldeneyes



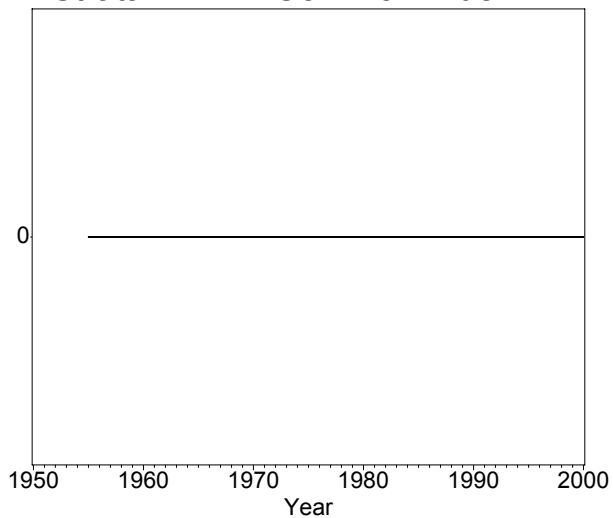
Strata 41-42 Bufflehead



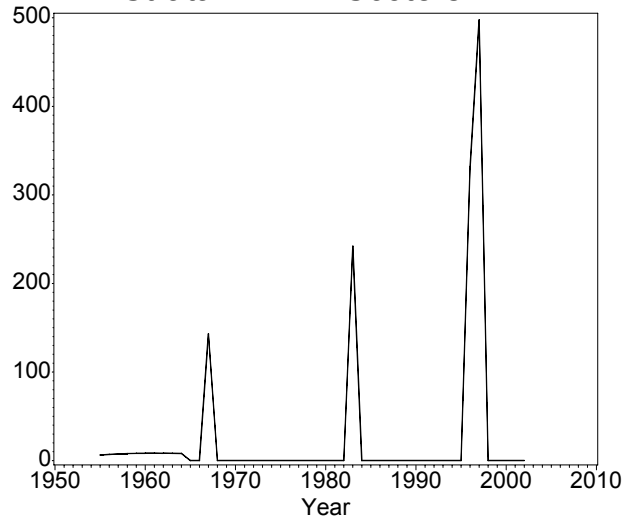
Strata 41-42 Long-tailed duck



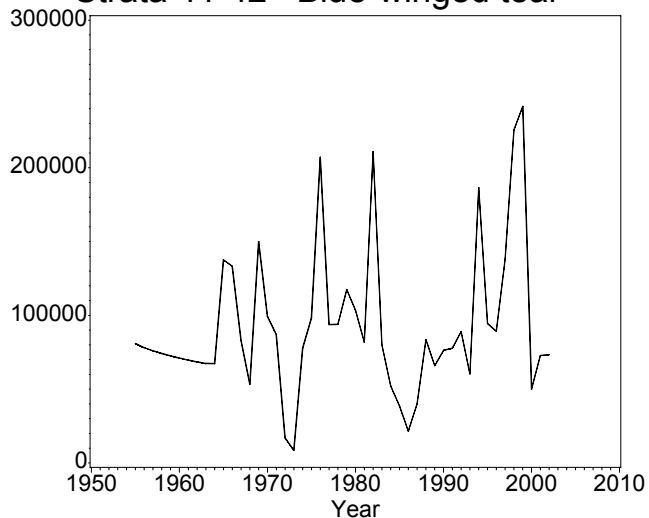
Strata 41-42 Common Eider



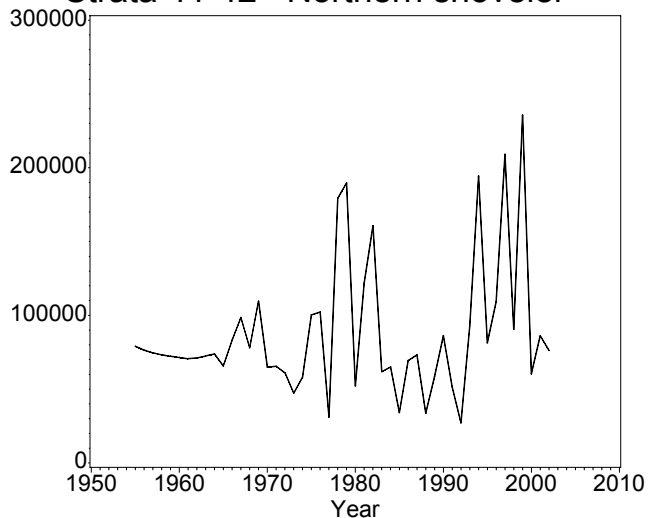
Strata 41-42 Scoters



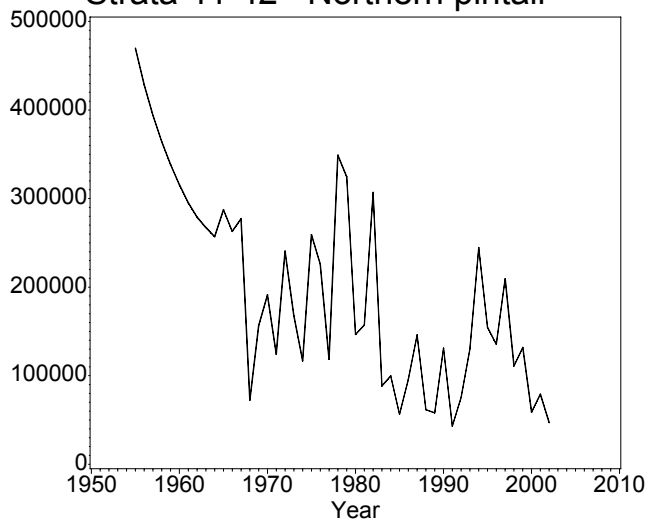
Strata 41-42 Blue-winged teal



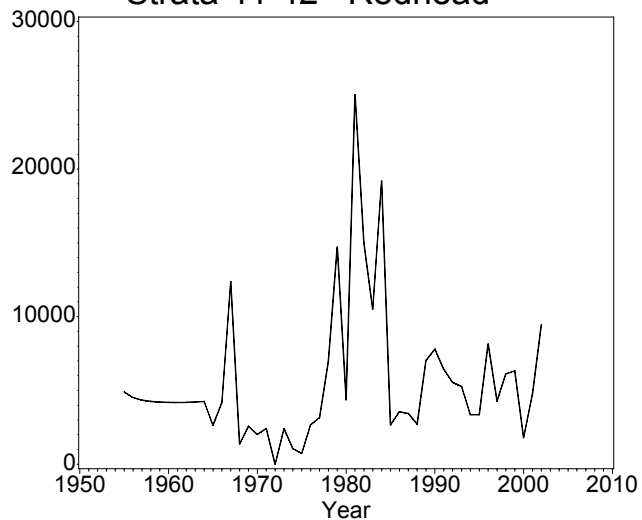
Strata 41-42 Northern shoveler



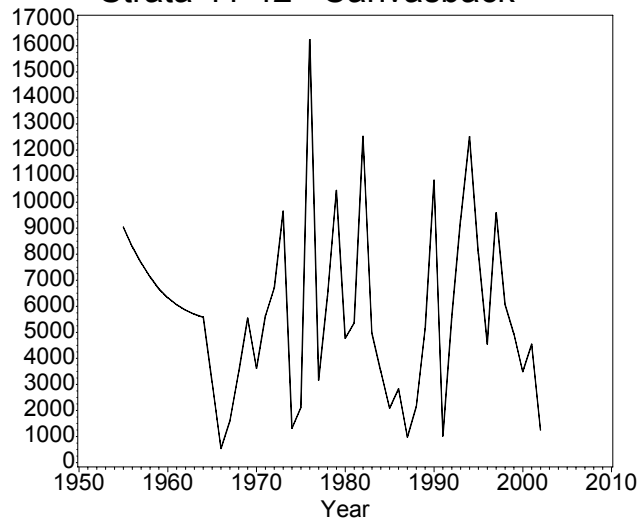
Strata 41-42 Northern pintail



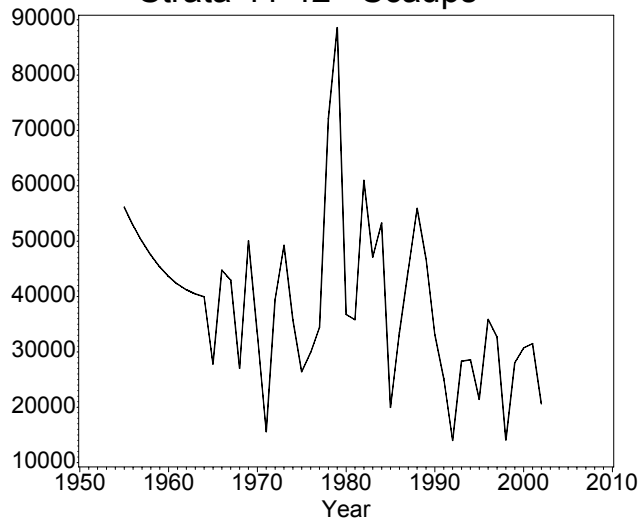
Strata 41-42 Redhead



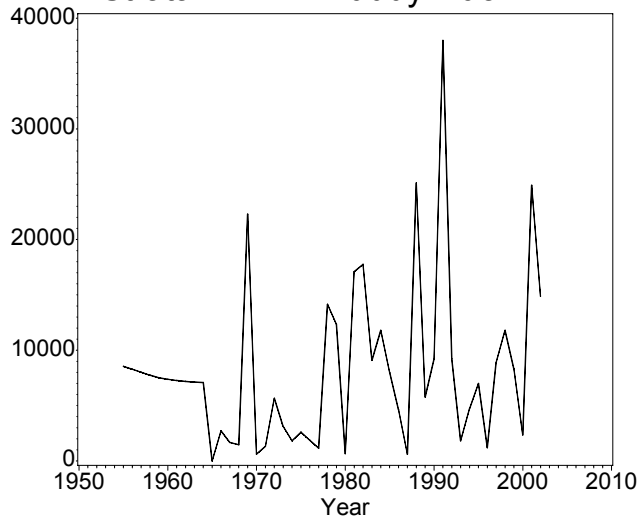
Strata 41-42 Canvasback



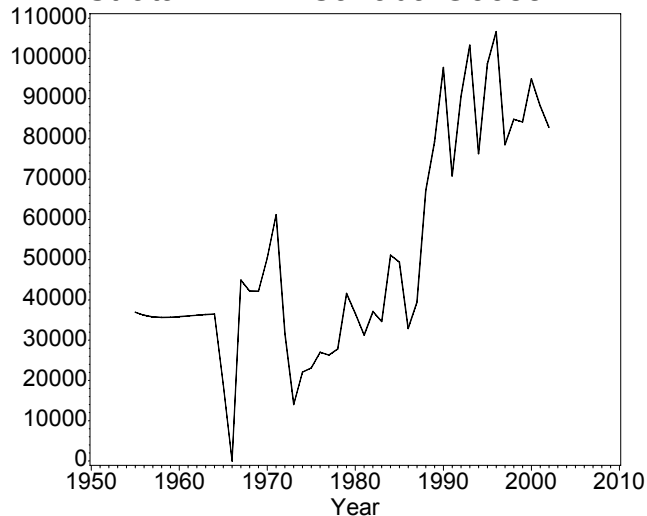
Strata 41-42 Scaups



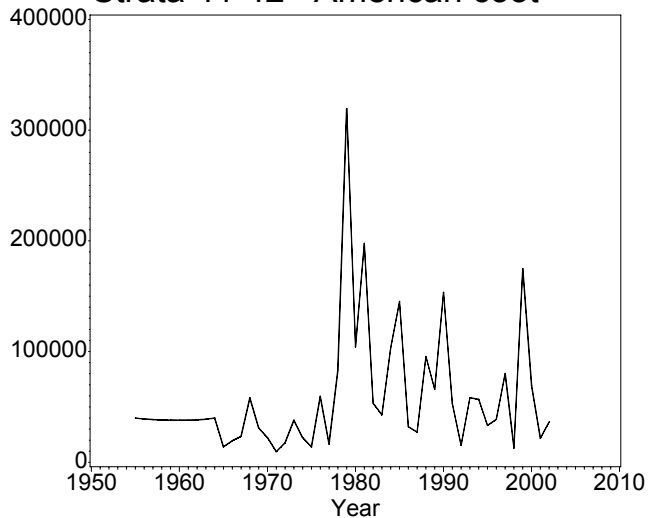
Strata 41-42 Ruddy Duck



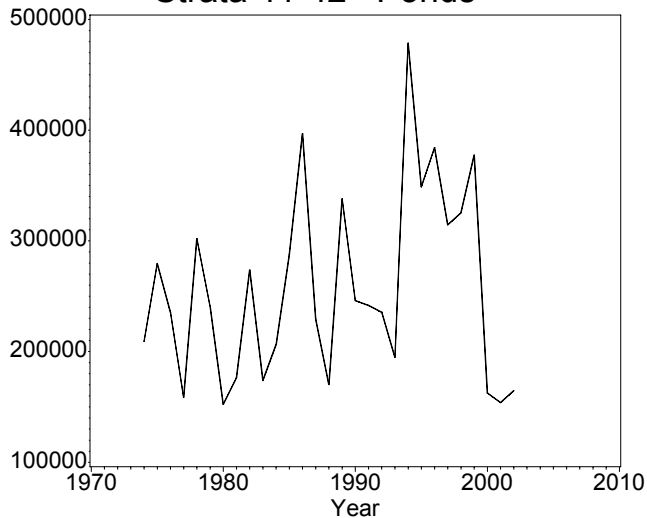
Strata 41-42 Canada Goose



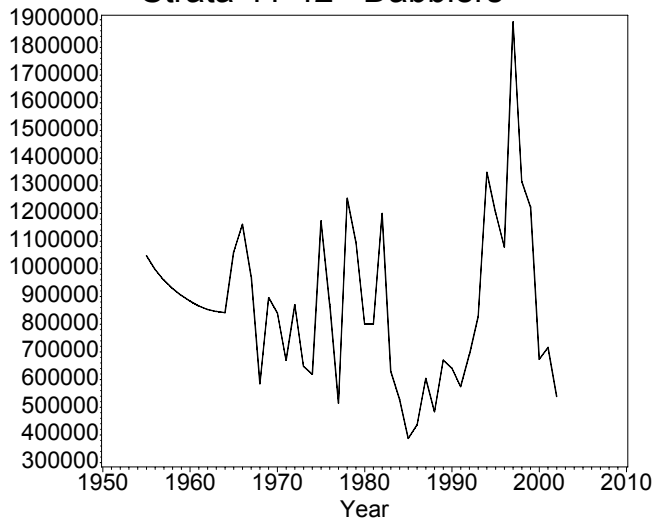
Strata 41-42 American coot



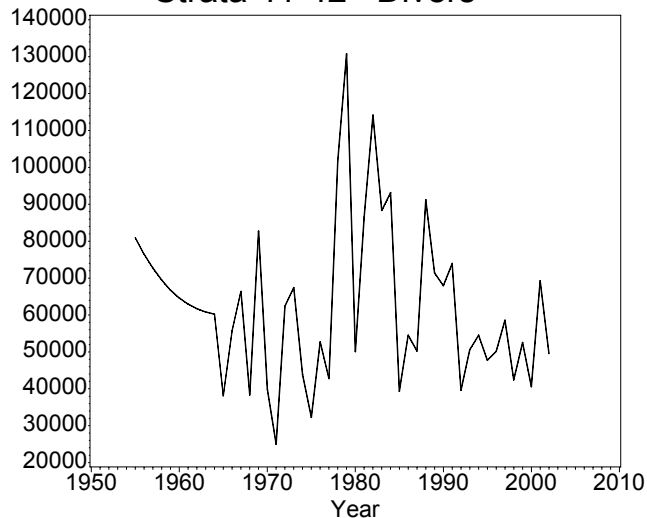
Strata 41-42 Ponds



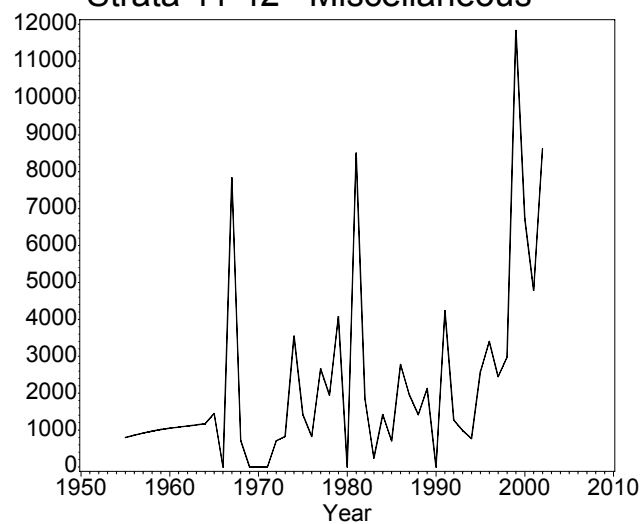
Strata 41-42 Dabblers



Strata 41-42 Divers



Strata 41-42 Miscellaneous



Strata 41-42 Total Ducks

